

**Congenital:** the condition existed at birth

**Dislocation:** loss of contact between femoral head and acetabulum

**Pathology & Obstacles for reduction:**

- 1-Fibrofatty tissue hypertrophy → fills space between acetabulum and femoral head
- 2-Labrum hypertrophy (inverted or everted) → Limbus
- 3-Ligamentum Teres elongated and may be hypertrophied
- 4-Capsule is constricted by iliopsoas tendon causing hour-glass deformity
- 5-Abnormal Capsular adhesions may be present at the floor of the acetabulum or around the neck
- 6-Shortening (Contracture) of Pelvi-femoral muscles

**Incidence:**

- The incidence is between 1 - 1.5 per 1000 live births
- Sex: 5 - 8 times more in girls than boys
- Racial and geographic variations: More in Chinese, Swedish, and Yugoslavians  
More in white than black infants
- Side: -Left in 60 % -Right in 20% -Bilateral in 20% of cases

**Etiology**

- Mechanical factor: Small space, tight abdominal wall, and breech presentation
- Genetic factor: Inherited (positive family history), more in girls
- Hormonal: Relaxin, Estrogen
- Environmental: Cradleboard (maintain the legs together, hips and knees fully extended)

**Associated congenital anomalies**

- 1-Congenital talipes equinovarus
- 2- Calcaneovalgus
- 3-Torticollis

**Newborn at risk of CDH:**

- 1-Positive family history
- 2-First-born female
- 3-Breech presentation (Complete – Frank)
- 4-Oligohydramnios
- 5-Multiple pregnancy (Twins)

**Diagnosis:**

- History: help to identify patients of high risk group
- General examination: help to identify patients with associated anomaly or teratologic syndromes

**Clinical Finding:**

(Vary with the age and degree of displacement of the femoral head)

**A) Birth to six months of age: (Exam Q)**

- 1-Asymmetric thigh folds and popliteal crease
- 2-Positive Galeazzi sign
- 3-Asymmetry of inguinal folds
- 4-Positive Ortolani test
- 5-Positive Barlow test

**\*\*Galeazzi Test (Sign):**

- Flex the infant's knees in the supine position so that the ankles touch the buttocks
- Positive → The knees are not level

**\*\*Barlow Test:**

- Adduct the hip while applying light pressure on the knee, directing the force posteriorly
- Positive → Femoral head slips out of acetabulum

**\*\*Ortolani Test: (Test for Reduction)**

1-Flexing the hips and knees of a supine infant to 90 degrees

2-The examiner, with index fingers, places anterior pressure on the greater trochanters, gently and smoothly abducting the infant's legs using the examiner's thumbs

► **Positive** → clunk or click can be heard and felt as the femoral head relocates into acetabulum

**B) Six months to walking age**

1- Limitation of hip abduction in 90 degrees of hip flexion

2- Positive Galeazzi sign

3- Marked asymmetry of the thigh, inguinal folds and popliteal creases

4- Telescoping sign (femur can be freely moved up and down)

**C) After walking age**

1-Excessive lumbar lordosis, protuberant abdomen, prominent greater trochanter

2-Positive Trendelenburg sign (pelvis droops on the unaffected side while standing only on the affected)

**Investigations:**

**1-Radiology:** Femoral head is not ossified and a greater part of the acetabulum is cartilaginous

**\*\*4 Quadrant test:** 2 lines are drawn:

-**Hilgenreiner's line:** drawn horizontally through the superior aspect of both triradiate cartilages

-**Perkin's line:** perpendicular to Hilgenreiner's line, intersecting the lateral most aspect of acetabular roof

•Normal: Head or most neck is below the Hilgenreiner's line & medial to Perkin's line

•Subluxation: below & lateral      •Dislocation: Above & Lateral

**2-Ultrasonography (Exam Q):**

The hip of the neonate and young infant up to 6 months is best assessed by ultrasonography

**3-CT Scan:** shows the concentricity of reduction in the cast

**4-MRI:** performed to delineate the cartilaginous and soft tissue pathology of the hip, the adequacy of reduction, and any ischemic process of the femoral head

**5-Arthrography:** replaced by newer imaging techniques

**Treatment:**

Goal→ To achieve and maintain a concentric reduction of hip joint

**A) New born to 6 month (Exam Q)**

1-Simple positioning device: Satisfactory for instability in first 1-2 weeks of life (e.g. double napkins)

2-Secure Devices: Pavlik Harness

**B) Six months to walking age:**

1-Closed reduction, and application of hip spica

2-Open reduction and hip spica

**C) After walking age:**

1-Pelvic osteotomy.

2-Proximal femoral osteotomy: -Femoral shortening    -Varus derotation osteotomy

3-Combined pelvic and femoral procedures

**Complications of Treatment:**

1-Ischemic necrosis the commonest and most important complication

2-Redislocation after closed or open reduction

